

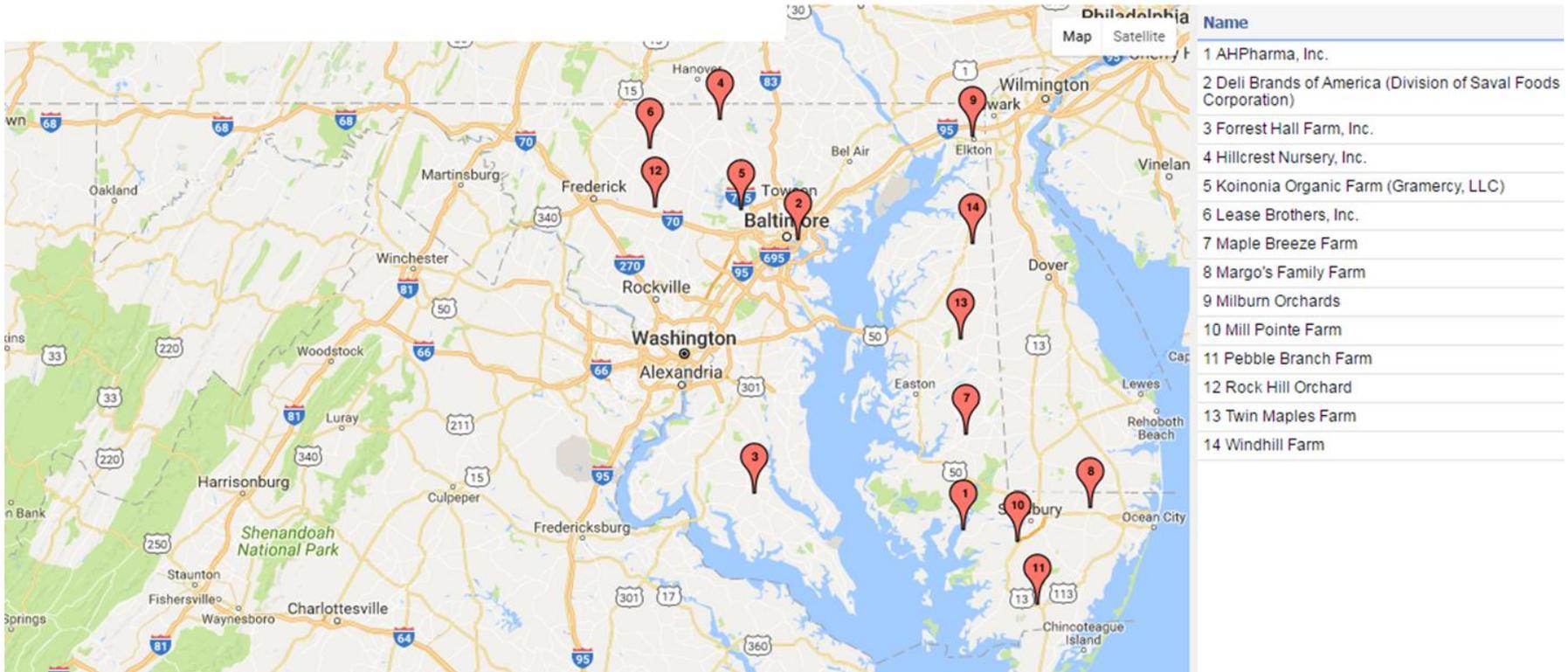
2016 Kathleen A.P. Mathias Agriculture Energy Efficiency Program Results



Maryland
Energy
Administration

www.Energy.Maryland.gov

Map of FY16 Grantees



AHPharma, Inc. (Wicomico County)

1. Ventilation – Poultry Houses 1-2

- a. Replaced four 1.5 hp current ventilation fans with four energy efficient fans with shutters.

2. Lighting – Poultry Houses 1-2

- a. Replaced (56) 12-watt LED fixtures with (60) 6-watt LED fixtures
- b. Replaced (4) 60-watt Halogen flood light fixtures with (6) 12-watt LED fixtures
- c. Replaced (4) linear fluorescent fixtures with linear LED fixtures.

3. Building Envelope – Poultry Houses 1-2

- a. Installed metal siding, ½” foam insulation and heavy-duty plastic to prevent air exchange.
- b. Installed R-38 insulation in ceilings where there was degradation.

Completed Measures	Est. Annual Electric Savings (kWh)	Est. Annual Propane Savings (gal)	Energy Savings (MMBtu)	Energy Cost Savings	Installed Cost	Est. Payback in Years
Houses 1-2: Ventillation	13,094	0	44.7	\$1,820	\$2,040	1.1
Houses 1-2: Lighting	2,452	0	8.4	\$341	\$1,010	3.0
Houses 1-2: Building Envelope	0	674	61.7	\$1,880	\$14,981	8.0
Totals	15,546	674	114.8	\$4,041	\$18,031	4.5

Maple Breeze Farm (Dorchester County)

1. **Insulated Brood Curtains – Poultry House 3**
 - a. Replaced (4) uninsulated brood curtains with (4) new insulated brood curtains.
2. **Tunnel Fan Covers – Poultry Houses 3-4**
 - a. Installed (20) tunnel fan covers on existing fans.
3. **Radiant Heaters – Poultry House 4**
 - a. Replaced the existing (15) inefficient forced hot air heaters with (17) energy efficient radiant heaters.

Completed Measures	Est. Annual Propane Savings (gal)	Energy Savings (MMBtu)	Energy Cost Savings	Installed Cost	Est. Payback in Years
House 3: Installed Brood Curtain	123	11.3	\$205	\$2,000	9.8
House 3: Insulated Tunnel Fan Doors	293	26.8	\$490	\$2,875	5.9
House 4: Insulated Tunnel Fan Doors	293	26.8	\$490	\$2,875	5.9
House 4: Radiant Heaters	437	40.0	\$731	\$21,500	29.4
Totals	1,146	104.9	\$1,916	\$29,250	15.3



Deli Brands of America (Baltimore City)

1. Refrigeration Units - Whole facility, (new addition not included)

- a. Installed 20 solid state controllers with accessories and Wi-Fi communication for current refrigeration units.
- b. Replaced current inefficient refrigeration motors with 35 brushless, high efficiency, electronically commutated motors including accessories.
- c. Replaced refrigeration systems in; (1) cooler, (2) freezer and (1) process areas.

2. Lighting - Whole facility, (new addition not included)

- a. Replaced approximately (400) 4' and 8' fluorescent fixtures with less than (1,500) 4' 17-watt LED fixtures throughout the facility

Location/Project Description	Electric Savings (kWh)	Energy Savings (MMBtu)	Energy Cost Savings	Installed Costs	Est. Payback in Years
Refrigeration	574,326	1,960	\$56,284	\$115,498	2.1
Lighting: Replace 4' and 8' fluorescent fixtures with 4' 17-watt LED fixtures throughout the facility	225,972	771	\$22,145	\$79,470	3.6
Totals	800,298	2,731	\$78,429	\$194,968	2.5

Hillcrest Nursery, Inc. (Baltimore County)

1. **Dan’s House: replace glass greenhouse material with 16mm Lexan:**
 - a. Removed inefficient glass greenhouse material
 - b. Installed energy efficient triple wall Lexan and new aluminum framing for Lexan panels
2. **Greenhouse 1: replace glass greenhouse material with 16mm Lexan:**
 - a. Removed inefficient glass greenhouse material
 - b. Installed energy efficient triple wall Lexan and new aluminum framing for Lexan panels
3. **Dan’s House: install 60mm foam board insulation on knee wall:**
 - a. Removed old inefficient knee wall material
 - b. Installed new efficient knee wall foam board

Completed Measures	Propane Savings (gal)	Coal Savings (tons)	Energy Savings (MMBtu)	Est. Annual Energy Cost Savings	Est. Installed Cost	Est. Payback in Years
Dan’s House: Replace glass with 16mm triple wall lexan	6,161	47	1,487	\$13,184	\$80,656	6.1
Greenhouse 1: Replace glass with 16mm triple wall lexan	3,556	0	326	\$3,378	\$32,910	9.7
Dan’s House: Install 60mm foam board insulation (R-16) on knee wall	133	3	61	\$514	\$8,008	15.6
Totals	9,850	50	1,874	\$17,076	\$121,574	7.1



Lease Brothers, Inc. (Carroll County)

1. Lighting – Office, Outbuildings, Elevator, and Premium Barn

- a. Replaced existing lighting fixtures with energy efficient LED fixtures.
- b. (10) 400W Metal Halides with (24) 203W LEDs
- c. (60) 100W Incandescents with (60) 14W LEDs
- d. (7) 175W Metal Halides with (7) 50W LEDs
- e. (15) T8 and T12 fixtures with (35) 17W LEDs
- f. (2) 1000W Metal Halide with (2) 129W LEDs

2. Refrigerator – Office

- a. Replaced old and inefficient refrigerator with a 24-cubic foot Energy Star rated refrigerator.

Completed Measures	Est. Annual Electric Savings (kWh)	Energy Savings (MMBtu)	Energy Cost Savings	Installed Cost	Est. Payback in Years
Lighting	18,277	62.4	\$1,847	\$27,634	15
Refrigerator	1,123	3.8	\$114	\$1,169	10.3
Totals	19,400	66.2	\$1,961	\$28,803	14.7



Margo's Family Farm, LLC. (Wicomico County)

1. **Heaters – House 2**
 - a. Replaced current inefficient heaters in House 2 with 2 30' radiant tube heaters
2. **Lighting – Houses 1-3**
 - a. Replaced existing inefficient lighting fixtures with 9.4-watt LED fixtures (24 fixtures per house in Houses 1-2, 72 fixtures in House 3).
3. **Brood Curtains – Houses 1-3**
 - a. Replaced (2) uninsulated brood curtains with (2) insulated brood curtains per house.
4. **Ceiling Insulation – House 3**
 - a. Installed R-19 insulation in house 3.

Completed Measures	Electric Savings (kWh)	Propane Savings (gal)	Energy Savings (MMBtu)	Est. Annual Energy Cost Savings	Installation Cost	Est. Payback in Years
Heaters-Replace current heaters in Houses 2 Invoiced only replaced 2 of 12 proposed	0	32.67	18	\$90	\$2,700	30
Lighting-Replace current lighting fixtures with 9.4-watt LED fixtures (24 fixtures per house in Houses 1-2, 72 fixtures in House 3).	19,499	0	67	\$2,453	\$900	.59
Brood Curtains-Replace (2) current uninsulated brood curtains with (2) insulated brood curtains per house.	0	22	2	\$61	\$2,279	41.80
Ceiling Insulation-Install blown insulation with an R-value of R-19 over current material in House 3 Invoiced only installs in house 3	0	199.5	37	\$553	\$4,160	7.5
Totals	19,499	254.17	124	\$3,157	\$10,039	3.2



Milburn Orchards (Cecil County)

1. Solar PV

- a. Installed a 125 kW solar PV roof mount system producing 170,420 kWh/yr.

2. Lighting

- a. Replaced existing metal halide and incandescent fixtures with LED Lights on 38 fixtures.

Completed Measures	Electric Savings (kWh)	Energy Savings (MMBtu)	Est. Annual Energy Cost Savings	Est. Installation Cost	Est. Payback in Years
Solar PV-Install a 125 kW solar PV roof mount system producing 170,420 kWh/yr.	155,079	595.68	\$20,393	\$307,230	15.1
Lighting – replace existing metal halide and incandescent fixtures with LED Lights(total of 38 fixtures)	19,499	0	\$2,564	\$10,742	4.2
Totals	174,578	595.68	\$22,957	\$317,972	13.9

Mill Pointe Farm (Somerset County)

1. Lighting – Houses 1-9

- a. Replaced current (603) 15 watt CFL fixtures with 10 watt LED fixtures in the brood and whole house areas.

2. Ventilation – Houses 1-8

- a. Replaced current (32) 36” exhaust fans (4 per house in 8 houses) with (32) energy efficient fans with cones.
- b. Replaced current (24) 48” tunnel fans (8 per house in 3 houses) with (18) 54” energy efficient fans with cones.
- c. Replaced current (40) 50” tunnel fans (8 per house in 5 houses) with (30) 54” energy efficient fans with cones.

Completed Measures	Electric Savings (kWh)	Energy Savings (MMBtu)	Est. Annual Energy Cost Savings	Actual Installed Cost	Est. Payback in Years
Replace current (603) 15 watt CFL fixtures with 10 watt LED fixtures in the brood and whole house areas	9,314	32.04	\$1,023	\$1,554	1.5
Replace current (32) 36” exhaust fans (4 per house in 8 houses) with (32) energy efficient Aerotech fans with cones.	25,563	87	\$2,807	\$35,200	12.5
Replace current (24) 48” tunnel fans (8 per house in 3 houses) with (18) 54” energy efficient American Coolair fans with cones.	7,156	24	\$786	\$19,800	25.2
Replace current (40) 50” tunnel fans (8 per house in 5 houses) with (30) 54” energy efficient American Coolair fans with cones.	21,265	73	\$2,335	\$33,000	14.1
Totals	63,298	216.04	\$6,951	\$89,554	12.9



Pebble Branch Farm, LLC. (Worcester County)

1. Heaters – Houses 1-8

- a. Replaced current heaters with four energy efficient 60’ 125,000 Btu radiant tube heaters per house.

2. Air Sealing – Houses 1-8

- a. Add closed cell polyurethane foam to seal air leaks within the houses.

3. Tunnel Doors – Houses 1-3, Houses 5-8

- a. Replaced existing uninsulated tunnel curtains with 140 insulated tunnel doors

Completed Measures	Propane Savings (gal)	Energy Savings (MMBtu)	Est. Annual Energy Cost Savings	Installed Cost	Est. Payback in Years.
Radiant Heaters	3,073	282	\$5,611	\$44,000	7.88
Air Sealing	2,140	196	\$3,908	\$15,086	3.9
Tunnel Doors	1,028	94	\$1,877	\$56,000	29.8
Totals	6,241	572	\$11,396	\$115,086	10.1



Rock Hill Orchard, LLC. (Montgomery County)

1. **Compressor Heat Recovery Unit - Dairy/Creamery Building Mechanical Room**
 - a. Installed a Compressor Heat Recovery unit to recover the heat from the current Ice Builder unit to pre-heat water used for Dairy.
2. **Condensing Unit- Farm Market**
 - a. Replaced current condensing unit with an energy efficient 2 hp scroll compressor.
3. **Solar PV**
 - a. Installed a 137 kW solar PV system.

Completed Measures	Est. Electric Savings (kWh)	Est. Propane Savings (gal)	Est. Energy Savings (MMBtu)	Est. Annual Energy Cost Savings	Installed Costs	Est. Payback in Years.
Compressor Heat Recovery- Install a CHR unit to recover the heat from the Ice Builder unit to pre-heat water used for Dairy.	0	669	61	\$976	\$6,274	6.4
Walk-in Cooler - Replace current condensing unit with a 2 hp scroll compressor	2,088	0	7	\$311	\$4,550	14.6
Solar Array-Install 137 kW solar PV system	180,232	0	615	\$26,855	\$388,030	14.4
Total	182,320	669	683	\$28,142	\$398,854	14.2



Twin Maple Farm (Caroline County)

1. Attic Insulation – Existing Houses 5-8

- a. Added 21,000 ft² blown in fiberglass insulation with an R-value of R-19 over the existing attic insulation in Houses 5-8 and 33,500 ft² houses 7-8.

2. Tunnel Doors – Existing Houses 5-8

- a. Installed 168' long, 5' tall black tunnel doors with accessories for Houses 5-6.
- b. Installed 240' long, 5' tall black tunnel doors with accessories for Houses 7-8.

Completed Measures	Propane Savings (gal)	Energy Savings (MMBtu)	Est. Annual Energy Cost Savings	Installed Cost	Est. Payback in Years
Attic Insulation – Add blown in fiberglass insulation with an R-value of R-19 over the existing attic insulation in Houses 5-8.	5,823	533.55	\$9,026	\$10,000	1.1
Tunnel Doors: Install 5' tall black Chorettime tunnel doors with accessories for Houses 5-8.	1,290	118	\$2,000	\$48,080	24
Totals	7,113	651.55	\$11,026	\$58,080	5.3



Windhill Farm (Dorchester County)

1. **Replaced incandescent lights with LED lights:**
 - a. Removed existing inefficient bulbs
 - b. Installed (374) 6-watt LEDs
 - c. Installed (154) 40-watt CFLs
 - d. Installed (5) LED dimmers
2. **Installed radiant tube heaters in Houses 1-5:**
 - a. Removed existing inefficient forced hot air heaters.
 - b. Installed (8) 30' 100,000 Btu/hr radiant tube heaters, (8) 40' 100,000 Btu/hr radiant tube heaters, and (24) 50 ft. 125,000 Btu radiant tube heaters in Houses 1-5

Completed Measures	Electric Savings (kWh)	Propane Savings (gal)	Energy Savings (MMBtu)	Est. Annual Energy Cost Savings	Installed Cost	Est. Payback in Years
LED Lighting	73,761	0	252	\$6,697	\$6,530	1
Radiant Heating	0	1,872	171	\$2,870	\$63,840	22.2
Totals	73,761	1,872	423	\$9,567	\$70,370	7.4



Forrest Hall Farm, Inc. (St. Mary's County)

1. **Greenhouse Lighting: Replaced 400-watt Metal Halide Fixtures with 175-watt LED Fixtures:**
 - a. Removed existing 400-watt metal halide fixtures.
 - b. Installed 175-watt LED fixtures in place.
2. **Shop Roof Mount Solar: Install a 48.98 kW solar array:**
 - a. Installed 48.98 kW roof mount solar array.

Completed Measures	Electricity Savings (kWh)	Energy Savings (MMBtu)	Est. Annual Energy Cost Savings	Installed Costs	Est. Payback in Years
Greenhouse Lighting: Replace 400-Watt Metal Halide Fixtures with 175-watt LED Fixtures	21,924	75	\$3,069	\$15,000	4.9
Shop Roof Mount Solar: Install a 48.98 kW solar array	64,209	219	\$8,989	\$147,400	16.4
Totals	86,133	294	\$12,058	\$162,400	13.5



Final Results For FY16

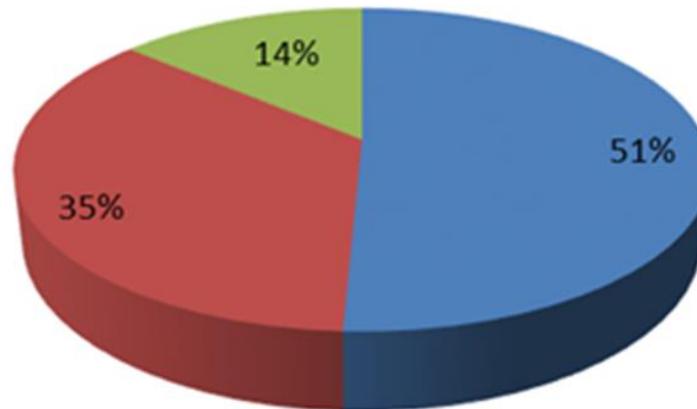
Farm	Electricity Savings		Propane Savings		KWh Solar Generation		Estimated Annual Energy Cost Savings	Actual Installed Cost	Estimated Payback in Years
	kWh	MMBtu	Gal	MMBtu	kWh	MMBtu			
Forest Hall Farm	86,133.00	294.00			64,209.00	219.00	\$12,058	\$162,400	13.5
Hillcrest Nursery Inc			9,850.00	1,874.00			\$17,076	\$121,574	7.1
Maple Breeze			1,146.00	104.90			\$1,916	\$29,250	15.3
Pebble Branch			6,241.00	572.00			\$11,396	\$115,086	10.1
Windhill Farm	73,761.00	252.00	1,872.00	171.00			\$9,567	\$70,370	7.4
AH Pharma	15,546.00	53.00	674.00	62.00			\$4,041	\$18,031	4.5
Lease Brothers	19,400.00	66.20					\$1,961	\$28,803	14.7
Deli Brands	800,298.00	2,731.00					\$78,429	\$194,968	2.5
Margo Family	19,499.00	66.55	254.17	23.28			\$3,157	\$10,039	3.2
Milburn Orchards	174,578.00	595.68			155,079.00	529.00	\$22,957	\$317,972	13.9
Mill Pointe	63,298.00	216.04					\$6,950	\$89,554	12.9
Rock Hill Orchard	182,320.00	622.26	669.00	61.28	180,232.00	615.00	\$28,142	\$398,854	14.2
Twin Maples			7,113.00	651.55			\$11,025	\$58,080	5.3
Totals	1,434,833.00	4,896.73	27,819.17	3,519.01	399,520.00	1,363.00	\$208,676.00	\$1,614,981	7.7



Final Results For FY16, contd.

FY16 Mathias Ag Program Energy Savings and Generation Breakdown

■ Electric ■ Propane ■ Solar



Estimated energy savings and payback periods for projects funded in FY16 were determined with assistance from [EnSave, Inc.](http://www.ensave.com)

Thank you

Follow us for energy stories, tips and updates #MDEnergy



www.Energy.Maryland.gov